3, 7, (5), 15 p. 286

3. $$\int_0^1 \left(x^2 + x^{1/2}\right) dx$$

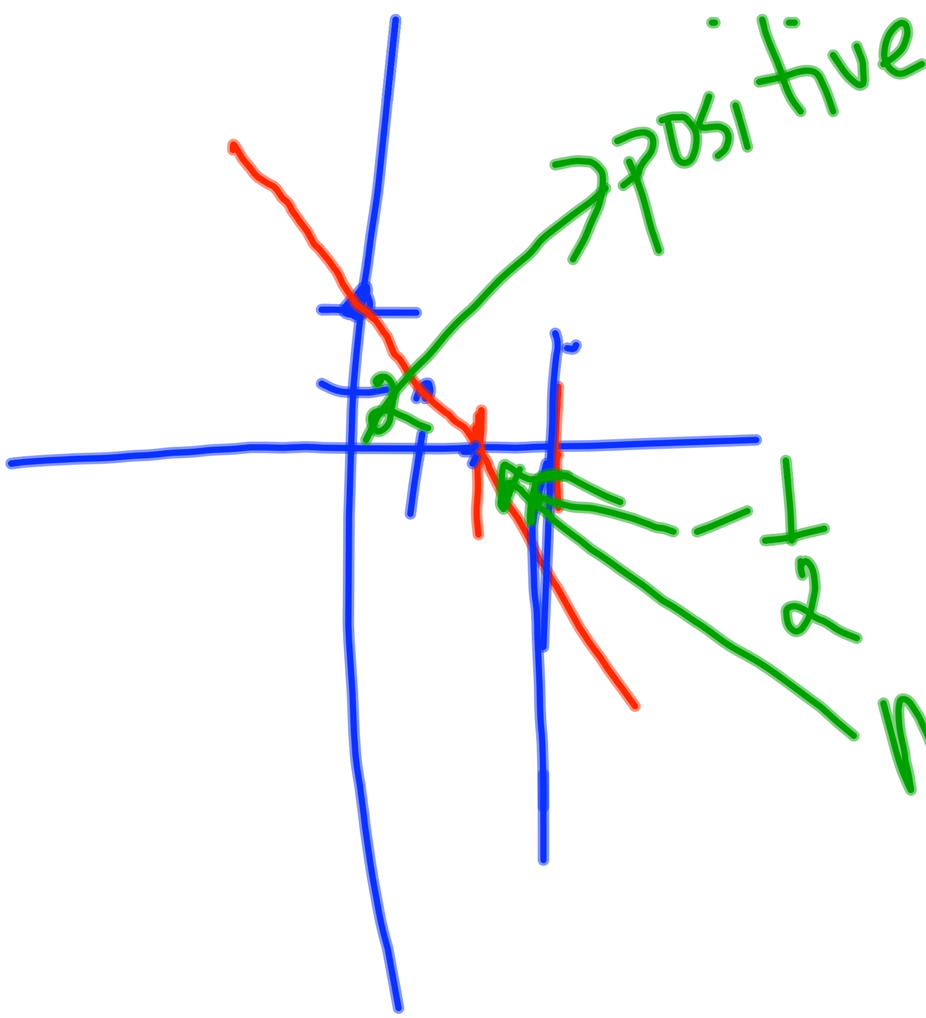
$$\left.\frac{x^3}{3} + \frac{2}{3}x^{3/2}\right]_0^1 = \frac{1}{3} + \frac{2}{3} = 1$$

7. $\displaystyle\int_0^\pi \sin x\,dx = -\cos x\Big]_0^\pi = -\cos\pi - (-\cos 0)$

$= -(-1) + 1$

$= 1 + 1 = 2$

15. $$\int_0^3 (2-x)\,dx = \int_0^2 (2-x)\,dx + \left|\int_2^3 (2-x)\,dx\right|$$



$$\left[2x-\frac{x^2}{2}\right]_0^2 + \left|\left[2x-\frac{x^2}{2}\right]_2^3\right|$$

$$4-2 + \left|\left(6-\frac{9}{2}\right)-2\right|$$

$$2 + \frac{1}{2} = 2\frac{1}{2}$$

5. $$\int_1^{32} x^{-6/5}\,dx = -5x^{-\frac{1}{5}}\Big]_1^{32} = -5(32)^{-\frac{1}{5}} - -5(1)^{-\frac{1}{5}}$$

$$\frac{-5}{32^{1/5}} + 5$$

$$-\frac{5}{2} + 5$$

$$2\tfrac{1}{2}$$

4. $$\int_0^5 x^{3/2}\,dx = \frac{2}{5}x^{5/2}\Big]_0^5 = \frac{2}{5}(\sqrt{5})^5$$

$$(\sqrt{5})^5 = \sqrt{5}\cdot\sqrt{5}\cdot\sqrt{5}\cdot\sqrt{5}\cdot\sqrt{5}$$

$$5\cdot 5\sqrt{5}$$

$$25\sqrt{5}$$

$$\frac{2}{\cancel{5}}\cdot\frac{\overset{5}{\cancel{25}}\sqrt{5}}{1}$$

$$= 10\sqrt{5}$$

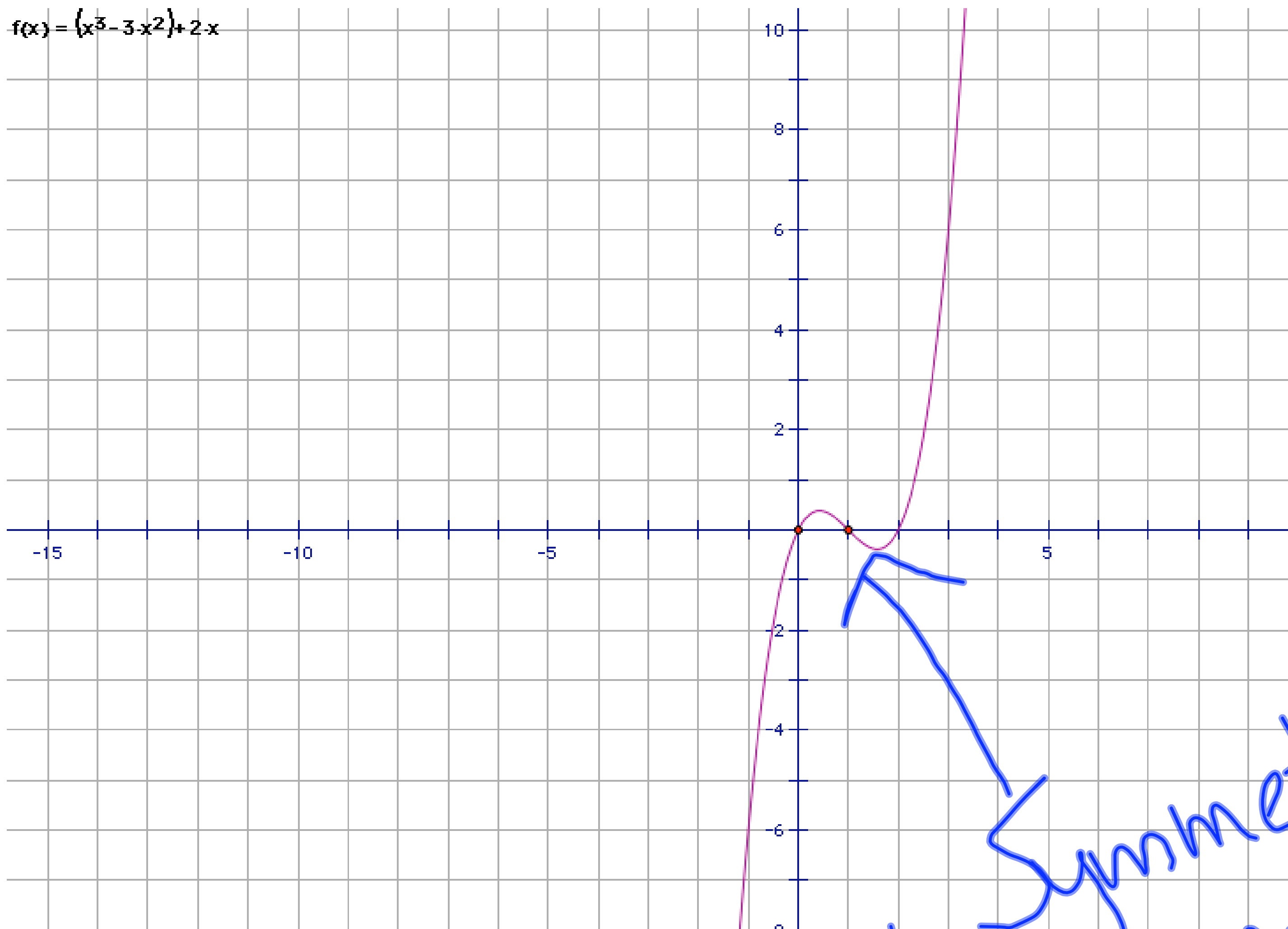
$$\int_0^1 (x^3 - 3x^2 + 2x)\,dx$$

$$\int_1^2 \left(x^3-3x^2+2x\right)dx$$

$$\left[\frac{x^4}{4}-x^3+x^2\right]_1^2$$

$$4-8+4-\left(\frac{1}{4}-\cancel{1+1}\right)$$

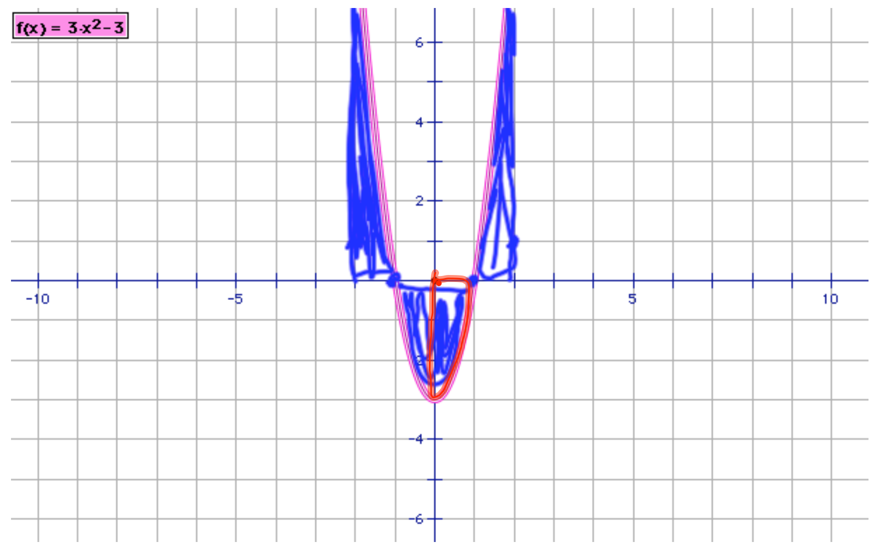
$$0-\frac{1}{4}$$



Symmetric

#17

take $\int_0^1 (f(x))\,dx$ and double it



2−x

Area under the x-axis

$$\int_0^1 (3x^2-3)\,dx = x^3-3x\Big]_0^1$$

$$= |-2| \text{ and double}$$

$$A = 4$$

Area above x-axis

$$\int_1^2 (3x^2-3)\,dx = x^3-3x\Big]_1^2 = (2)-(-2)$$

$$= 4$$

double it

$$A = 8$$

Total Area = 12

Handed in Work

p. 298-299

13, 14, 16, 17, 18, 20, 21, 30, 31